

Seismic reflection profiling in the metropolitan areas, Japan: results from the Kanto and Kinki areas

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The special project for seismic hazard mitigation in urban areas started in 2002 as a five-year's project. As one of the main part of this project, deep seismic profiling was undertaken in the Kanto and Kinki areas. The main purpose of these seismic profiling is regional characterization of the crust for better estimation of strong ground motions. In this paper, we provide a brief summary of seismic profiling in the Kanto area, which was carried out in 2002 to 2003 (Sato et al., 2005) and in 2005, and introduce the results of the 2004 Osaka-Suzuka seismic line in the Kinki area, south western Japan.

In the Kanto area, we identify the seismogenic source fault on the upper surface of the Philippine Sea plate. The depth to the top of this plate, 4 to 26 km, is much shallower than previous estimates based on the distribution of seismicity. This shallower plate geometry changes the location of maximum finite slip of the 1923 Kanto earthquake and its location corresponds to a zone of poor in reflection on the mega-thrust. Namely, a strong reflectivity zone along the mega-thrust coincidence with aseismic slip zone. In the Kinki area, a 120-km-long, seismic reflection profiling was carried out from Osaka to Suzuka across the Osaka and Ise basins and several active faults. Deep sub-horizontal reflectors are found at 26 and 16 km in depth. The shallower reflectors correspond to the base of seismogenic zone. Dipping reflectors, probable deeper extension of active faults merges the mid-crustal reflectors.